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NOTES ON THE ARBOREOUS, ARBORESCENT AND SUFFRUTICOSE FLORA OF OREGON (concluded).—*Fraxinus Oregana*, Nutt. Along streams and lowlands, attains 3 feet in diameter, generally smaller, low and scrubby, very little clear lumber to be had from the best trunks. It is used chiefly for fuel and is estimated for this purpose to be nearly double the value of either of the species of *Abies*, and brings about twice as much per cord in the market. As fuel its value is about equal to that of the oak, and very large quantities are now used in the country and the supply must soon become exhausted near the cities.

Celtis reticulata, Torr. A shrub of straggling growth, 6 feet high at the Dalles of the Columbia, fruiting abundantly, fruit dark brown when ripe.

Quercus Douglasii. Hook. This is the only species observed on the Williamette or Columbia rivers. It disappears near the coast and does not reach far into the Cascades. It seems confined to the hilly regions of valleys and attains 2 and 3 feet in diameter, rarely 4 feet, but is low and scrubby. Some trees will afford a 12 foot stick comparatively free from knots. The branches are wide spreading and drooping, often coming so near the ground that they can be reached with the hand. *Phoradendron flavescens*, var. *pubescens* grows upon this tree exclusively and is not rare on the lower drooping limbs. It is the hard-wood tree of the carriage maker and is extensively used in the manufacture of heavy wagons, but all light carriage material is brought from the Eastern States.

Castanopsis chrysophylla, A. DC. A branching shrub, 4 feet high in the Cascade mountains, with fruit resembling the chestnut.

Corylus rostrata, Ait., var. *Californica*, A. DC. The shrub of the usual size has rounder, not pointed leaves and the beak of the fruit quite short, the upper as well as the lower surface of the leaves pubescent, serratures much finer. Along streams, rather rare.

Myrica Californica, Cham. & Schlecht. Sandy hills on the coast. A shrub 4 to 10 feet high with lanceolate, toothed leaves.

Betula pumila, L. A shrub 3 to 4 feet high, in ponds.

Alnus Oregana, Nutt. (*A. rubra*, Bongard). A medium sized tree on stream banks in the valleys, the largest attaining 3 feet in diameter and 40 to 60 feet in height. Mostly scrubby and very little clear lumber can be made from the best trunks.

Salix longifolia, Muhl. On the Williamette River, 6 to 8 feet high.

Salix lanceolata, Anderson. A tree a foot in diameter, 30 feet high, with lanceolate, long pointed, smooth, finely serrated leaves, on banks of streams.

Salix chrysophylla, var. *pellita*, Anderson. Wet Alpine woods in the Cascades. A low shrub.

Salix Sitchensis, Bongard. A large shrub with silvery silky leaves, very pretty.

Salix sessilifolia, var. *villosa*, Nutt. A shrub on the Williamette River, 4 to 6 feet high, with whitish villous leaves.

Some other undetermined species occur.

Populus balsamifera, L. This is the common poplar of this State, attaining 4 feet in diameter, generally 2 to 3. It grows frequently symmetrical and rather tall and often affords logs for clear lumber. It abounds on the streams and lowlands in the valleys, and though common it is not abundant. It is used to some extent for lumber.

The leaves are rather lanceolate and not cordate, approximating or passing into *P. angustifolia*, Torr.

Populus tremuloides, Michx. A much rarer tree, abounding only in certain low wet localities. In size and habitat it is very much as it is found in the Eastern States.

Pinus ponderosa, Dougl. The true Douglasian form occurs mostly as a low scrubby tree on the dry slopes of the Cascades and bluffs of the Columbia River. It is used to some extent in the manufacture of lumber and for fuel.

Pinus contorta, Dougl. Two forms of the species occur in the Cascade mountains, mostly as mere shrubs, but sometimes attaining 30 feet in height and 4 to 6 inches in diameter.

Pinus albicaulis, Eng. On Mt. Hood at the limit of tree growth where it shelters in ravines and on the eastern sides of large rocks from the fierce western gales that prevail on that famous, perpetually snow-capped mountain. Some interesting effects of the influence of strong constant air currents upon tree growth are exhibited here not only in the leaning trunks, but in the decumbent and elongating mode of development seen in this species. Finding a resting place on the east side of some huge rock it grows erect until the top reaches the summit, from which the limbs elongate and spread eastward to a surprising length. The uppermost branches are often dead and bleached to a snowy whiteness. The species as developed here, was in staminate flower the first of August, no cones were seen. It grows 6 inches in diameter, low and straggling.

Pinus monticola, Dougl. A small tree resembling the white pine of the eastern states, grows along streams in the high Cascades, a foot in diameter and 40 to 50 feet high. The cones are large, 6 to 10 inches long, with rounded obtuse scales.

Abies Mertensiana, Lindl. This tree much resembles *A. Canadensis* of the eastern states. It occupies vast areas in the middle Cascades, but reaches the valleys sparingly. Some of the densest forests of the country are composed exclusively of this species, often growing so thickly as to shut out the light of the sun. Altitude changes the appearance of this species as it also does in some others. The valley specimens have a rather smooth bark, whilst the mountain forms have a rough furrowed bark. The trees average about 2 feet in diameter and reach the height of 200 feet in the Cascades, but they are little used at present, being mostly inaccessible in the mountains.

Abies Pattoniana, Jeffrey. (*A. Williamsoni*, Newberry.) This is a small species in the Alpine regions of the Cascades. It grows 6 inches to 2 feet in diameter and 40 to 60 feet high. It reaches, along with *Pinus albicaulis*, to the limit of trees on Mt. Hood. The gloom of these Alpine woods is made more dreary by the vast abundance of the dark gray lichen *Alectoria Fremontii*, Tuck., hanging in dense festoons from all the branches of this tree, evidently dwarfing it in its growth both in diameter and altitude, as it is said to grow much larger and taller at lower elevations.

Abies Douglasii, Lindl. This stands at the head of the forest trees of Oregon both in regard to size and stateliness and in its value to the industries of the country. It attains 6 and 8 feet in diameter, and, rarely, 300 feet in height, generally 200 to 250 feet and 2 to 4 feet in diameter. It is extensively manufactured into lumber for all building purposes. It affords probably 50 per cent. of all the fuel used by the inhabitants in the valley regions. The bark is thick and rough. It bears fruit abundantly.

Abies grandis, Lindl. This is the next most valuable timber tree. Attains equal height to *A. Douglasii*, but is much less in diameter (2 to 3½ feet). The bark is smooth, with blisters containing resin, which makes the handling of the wood very annoying, as the hands and clothing become coated with it. It is used for lumber and for fuel. The branches are short and symmetrically arranged, the whole tree forming a beautiful cone. The leaves are dark green, resembling *A. balsamea* of the eastern states. The cones are produced very sparingly on the topmost branches, the scales deciduous

Abies subalpina, Eng. This is a small tree in the Alpine regions confounded till recently with *A. grandis*. It is a beautiful symmetrical tree 30 to 60 feet high.

Abies Englemanni, Parry. In the higher Alpine regions, about Alpine prairies, etc. A stately tree of small diameter, growing so densely in its peculiar habitats, that no trunk can fall to the ground alone. Circular areas of an acre or two are frequently seen in the Alpine heights where the entire growth has been prostrated and lies a labyrinth of trunks that have apparently fallen in every direction, evidently caused by the action of a circular wind, no effects of which are to be seen outside of the prostrated areas. This tree in fruit, etc., much resembles *A. Menziesii* of the coast region, and is probably no more than a high mountain form of it.

Abies Menziesii, Dougl. This tree abounds in the coast regions to a limited extent where it fruits abundantly. It is not known to be of much importance to the country.

Taxus brevifolia, Nutt. Grows nearly or quite upright and attains a diameter of a foot or over, but is low and scraggy, with spreading, drooping limbs. The foliage is bright green and ornamental. It is used for fence posts chiefly on account of its durability, but it is scarce and of no great value to the country on that account. The berries are red and edible when ripe in September.

Juniperus communis, L., var. *alpinus*, Parl. This is a trailing form of the species, never rising from the ground but trailing and rooting from its limbs, forming large clumps 10 to 20 feet in diameter. Occurs at the limit of trees on Mt. Hood.

Cupressus Nutkanus, Hook. A low branching shrub in the Alpine regions of Mt. Hood. Identification doubtful.

Thuja gigantea, Nutt. Called cedar by the inhabitants. Is a tree of average size and height, 1 to 4 feet, generally 2 to 3 feet in diameter and 60 to 150 feet high. Inhabits the mountain ranges, reaching the Williamette valley at some localities. It is much used for shingles and split boards, being remarkable for straightness of grain and facility of splitting, often to very long lengths of even proportions. It is a valuable tree, but now nearly all the region where it plentifully abounds has been run over by the fires and it only exists as dead, blackened stumps, standing or prostrate, soon to be lost to the country. This destruction of forests in Oregon by fire seems to have been recent. The huge standing or prostrate dead trunks, now almost universal in the Coast range and over large areas of the Cascades, testify to the millions the country has lost by this destructive element.—Elihu Hall, Athens, Ill.

Bryological Notes; by C. F. Austin.—Didymodon Wollei (*Barbula? Wollei*, Aust., Bot. Gazette, March, 1877).—Plantæ dense cæspitosæ, fragiles saturate virides; caule erecto subsimplici, foliis siccitate subcrispatis madefactis subcirrhatis subcanaliculatis vel apice excepto planiusculis paulo undulatis margine planis minute papilloso-crenulatis apice pugioni formi-acutatis, costa percurrente, vel brevissime excurrente haud lutescente; flores et fructu ignoti.

Rocks in a ravine, near Bethlehem, Pa., *Rev. F. Wolle*.

Somewhat intermediate between *Barbula cæspitosa* and *Didymodon cylindricus*. From the former it differs in its longer stems, rather broader less carinate less undulate and more fragile leaves, not uniformly recurved-patent when moist, less pellucid at the base, and with the costa neither pellucid when moist nor shining on the back when dry. Very near the latter, but differing in its more robust habit, shorter and broader leaves rather less pellucid at the base and more or less contracted at the apex into a dagger-shaped canaliculate point.

Atrichum Selwyni, *n. sp.*—*Ab A. angustato* proximo differt; foliis latioribus subspathulatis plerumque obtusis basi excavatis, costæ lamellis solum 4–6 altioribus, *calyptra lævissima*.

North West Coast of British America, 1875, *Macoun*.

Stems about ½ inch high. Leaves lanceolate-oblong, subspatulate, mostly obtuse, the base excavated, the lamellæ of the costa 4–6, broad; otherwise they are about as in *A. angustatum*. Inflorescence dioecious; male plant not seen. *Calyptra perfectly naked*